

Spot Safety Project Evaluation

Project Log # 200512221

Spot Safety Project # 09-99-213

Spot Safety Project Evaluation of the Installation of a Left Turn Lane on US 52 at SR 2322 (Nazareth Home Rd) Rowan County

Documents Prepared By:

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9/5/2006
Date

Spot Safety Project Evaluation Documentation

Subject Location

Evaluation of Spot Safety Project Number 09-99-213 – US 52 at SR 2322 (Nazareth Home Rd) in Rowan County.

Project Information and Background from the Project File Folder

The spot safety project improvement countermeasure chosen for the subject location was the installation of a left turn lane on northbound US 52 at its intersection with SR 2322 (Nazareth Home Rd). The subject location is a 3-leg intersection controlled by a stop sign on SR 2322 (Nazareth Home Rd). US 52 is a two lane facility at the subject location with a speed limit of 50 mph and intersection warning signs on both approaches. SR 2322 (Nazareth Home Rd) has a speed limit of 35 mph and has a stop ahead warning sign.

A citizen requested the initial study after the death of his daughter-in-law at the intersection. In a letter sent to Governor Jim Hunt he said that the section of US 52 containing the subject intersection was heavily traveled, narrow, had fluctuating speed limits, and did not have enough turn lanes.

The initial crash analysis was conducted from March 1, 1996 to March 1, 1999. There were 7 total crashes during this period, all rear end-left turn crashes and deemed correctable by the improvement.

The final completion date for the improvement at the subject intersection was on November 21, 2000 with a total cost of \$65,000.00.

Naive Before and After Analysis

After reviewing the spot safety project file folder along with all the crashes at the subject location, the crash data omitted from this analysis to consider for an adequate construction period was from September 1, 2000 through January 31, 2001. The before period consisted of reported crashes from November 1, 1995 through August 31, 2000 (4 years, 10 months) and the after period consisted of reported crashes from February 1, 2001 through November 30, 2005 (4 years, 10 months). The ending date for this analysis was determined by the available crash data at the time the crash analysis was completed.

The treatment data consisted of all crashes on a strip of US 52 from 150 feet south of the turn lane and turn lane taper (MP 7.91) to 150 feet north of the turn lane taper (MP 8.08). *Please see attached location map for further details.*

The following data table depicts the Naive Before and After Analysis for the treatment location. Please note that Rear End Crashes on northbound US 52 and Left Turn – Same Roadway Crashes related to Nazareth Home Rd were the target crashes for the applied countermeasure.

<u>Treatment Information</u>			
	Before	After	Percent Reduction (-) Percent Increase (+)
Total crashes	17	2	-88.2
Total Severity Index	13.84	1	-92.8
Target Crashes	11	0	-100.0
Target Crashes Severity Index	18.82	0	-100.0
Volume	11,800	11,700	-0.8

<u>Injury Summary</u>	Before	After
Fatal Injuries	1	0
Class A Injuries	2	0
Class B Injuries	5	0
Class C Injuries	12	0
Total Injuries	20	0

The naive before and after analysis at the treatment location resulted in an 88 percent decrease in Total Crashes, a 100 percent decrease in Target Crashes, and a 93 percent decrease in Total Severity Index. The Average Daily Traffic (ADT) remained relatively constant. The before period ADT year was 1998 and the after period ADT year was 2003.

Results and Discussion

The naive before and after analysis involving the comparison of treatment actual before data versus treatment actual after data resulted in an 88 percent decrease in Total Crashes and a 100 percent decrease in Target Crashes, while the ADT remained relatively constant. The total severity index decreased 93 percent and total injuries decreased from 20 to 0. The summary results above demonstrate that the treatment location appears to have had a decrease in both Total Crashes and Target Crashes from the before to the after period.

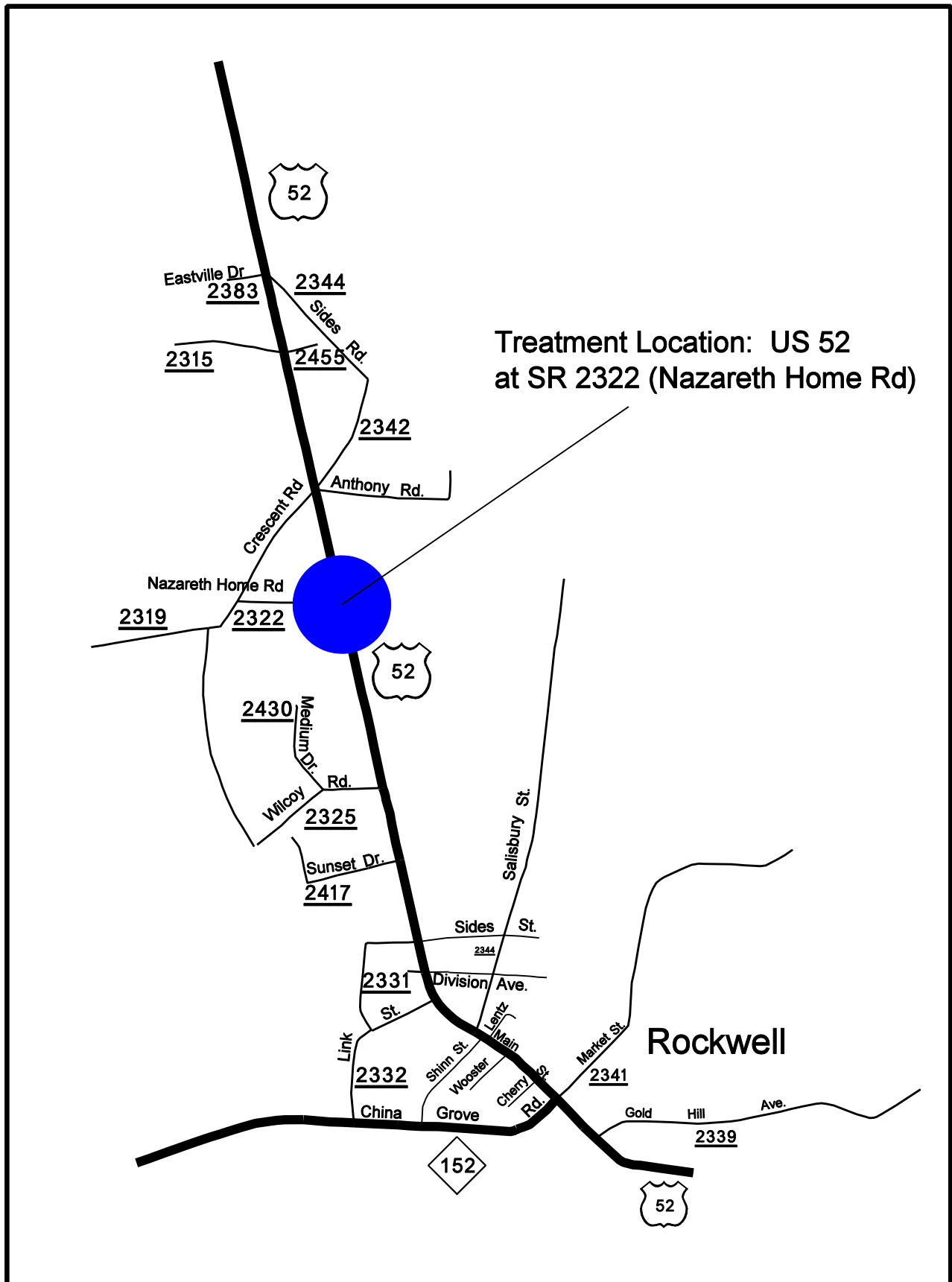
Referencing the *Collision Diagrams* and the previous table, it is apparent that the installation of the left turn lane helped to decrease rear-end crashes involving northbound vehicles waiting to turn left onto SR 2322. In the before period there were nine rear-end crashes at the intersection and two other crashes involving drivers attempting to avoid stopped vehicles. These two crashes were included as Target Crashes and are labeled as Crash Numbers 10 and 14 on the *Collision Diagram, Before Period*. Crash #10 involved the fatality mentioned in the *Project Background* section. The driver of a northbound vehicle approaching the intersection swerved off the roadway to avoid a collision with a stopped vehicle, overcorrected, and skidded into the path of an oncoming vehicle.

In the after period there were only two reported crashes in the study period, neither involving SR 2322.

Please see the attached *Treatment Site Photos*. Photos are provided for all three approaches to the subject location.

As the Safety Evaluation Group completes additional spot safety reviews for this type of countermeasure, we will be able to provide objective and definite information regarding actual crash reduction factors for this type of intersection.

Location Map Rowan County Safety Evaluation of Spot Safety Project 09-99-213



Treatment Site Photos Taken July 27, 2006



Traveling North on US 52



Traveling North on US 52



Traveling South on US 52



Traveling South on US 52



Traveling East on SR 232 (Nazareth Home Rd)



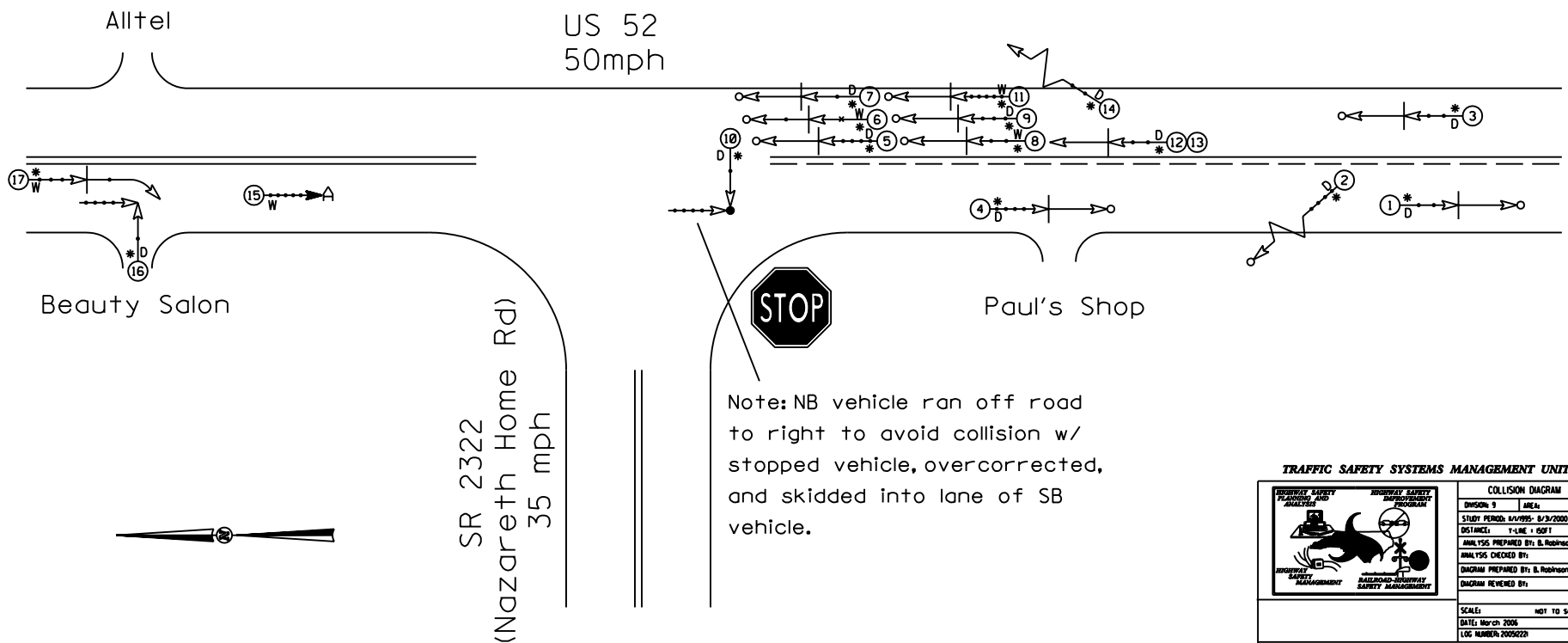
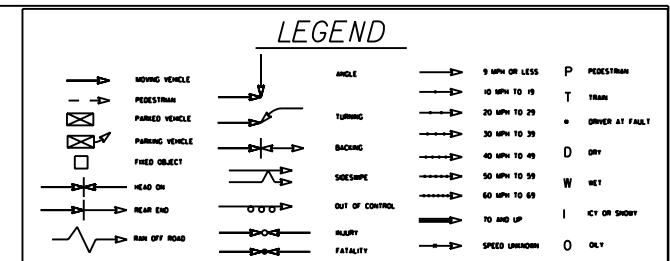
Traveling East on SR 232 (Nazareth Home Rd)

Rowan County

US 52 at SR 2322 (Nazareth Home Rd)

Treatment Site in The Before Period

From 11/1/1995 To 8/31/2000



TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT

COLLISION DIAGRAM	
DIVISION 9	AREA
STUDY PERIOD: 11/1/95 - 8/31/2000	
DISTANCE: T-100 + 100 FT	
ANALYSIS PREPARED BY: B. Robinson	
ANALYSIS CHECKED BY:	
DIAGRAM PREPARED BY: B. Robinson	
DIAGRAM REVIEWED BY:	
SCALE:	NOT TO SCALE
DATE: March 2006	
LOG NUMBER: 20050220	

N.C. DEPARTMENT of TRANSPORTATION
DIVISION of HIGHWAYS
TRAFFIC ENGINEERING AND SAFETY
SYSTEMS BRANCH

Rowan County

US 52 at SR 2322 (Nazareth Home Rd)

Treatment Site in The After Period

From 2/1/2001 To 11/30/2005

US 52
50mph

LEGEND

	MOVING VEHICLE		ANGLE		9 MPH OR LESS		P PEDESTRIAN
	PEDESTRIAN		TURNING		10 MPH TO 19		T TRAIN
	PAKED VEHICLE		BACKING		20 MPH TO 29		D DRIVER AT FAULT
	PAKED VEHICLE		BACKING		30 MPH TO 39		D DRY
	FIXED OBJECT		SKIDMARK		40 MPH TO 49		W WET
	HEAD ON		OUT OF CONTROL		50 MPH TO 59		I ICE OR SNOW
	REAR END		HALT		60 MPH TO 69		O ONLY
	RAN OFF ROAD		FATALITY		70 AND UP		
					SPEED UNKNOWN		

Alltel

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Beauty Salon

SR 2322
(Nazareth Home Rd)
35 mph



Paul's Shop



TRAFFIC SAFETY SYSTEMS MANAGEMENT UNIT



COLLISION DIAGRAM	
DIVISION 9	AREA
STUDY PERIOD:	2/1/2001-11/30/2005
DISTANCE:	1/4 MILE + 1/4 MILE
ANALYSIS PREPARED BY:	B. Robinson
ANALYSIS CHECKED BY:	B. Robinson
DIAGRAM PREPARED BY:	B. Robinson
DIAGRAM REVIEWED BY:	
SCALE:	NOT TO SCALE
DATE:	March 2006
LOG NUMBER:	20050220

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SYSTEMS BRANCH